

Reddit Recruit of Women Refused Abortion or Contraception Due to Their Provider's
Conscientious Objection

Honors Research Thesis

Presented in Partial Fulfillment of the Requirements for Graduation "with Honors Research
Distinction in Public Health" in the undergraduate college of The Ohio State University

By Katherine Friedman

The Ohio State University May 2017

Project Advisor: Dr. Maria Gallo, College of Public Health
Second Reader: Dr. Alison Norris, College of Public Health and College of Medicine

Abstract

Social media websites (e.g., Facebook and Twitter) have been used to recruit hard-to-reach populations for research. One hard-to-reach population is women who are refused contraception or abortion care by a healthcare provider or pharmacist due to the professional's moral or ethical beliefs constitute a hard-to-reach population. Restricting access to contraception can increase the rates of unintended pregnancy, which in turn are related to infant mortality and unsafe abortion. For a qualitative study, we used Reddit to recruit women who were denied reproductive healthcare in the last two years in the US. We chose this social media website for its anonymous nature and because of the topic's sensitivity. To our knowledge, this is the first study to use Reddit to recruit participants for data collection. We recruited participants via 1) Reddit posts asking eligible women to respond through Reddit's private messaging (PM) system and 2) PMs to Reddit users who had posted about an experience that involved being denied this care. For the first approach, we posted recruitment messages thirteen times on six 'subreddits' (Reddit pages dedicated to specific topics) at different times and days of the week during a five-month interval to reach as many women as possible. This approach yielded no interviews. For the second approach, we used key words in Reddit's search function, which led us to identify posts from 13 potentially-eligible women. After messaging these women, three completed the interview. The use of "throwaway accounts," accounts created solely to post something sensitive without associating it with a known account, might have negatively affected our ability to recruit. While posting a request for Reddit users to voluntarily respond through PM does not appear feasible, the second recruiting approach, in which potential participants were identified by searching posts, could be successful for recruiting hard-to-reach populations if sufficient numbers of existing posts were available.

Introduction

For the sake of individual well-being and public health, women need access to reproductive health services. Yet some women are refused care, specifically abortion or contraceptives, because providing these services goes against the religious or philosophical beliefs of the providers. Understanding the experiences of women who are turned away from accessing care can be challenging as this is a hard to reach population. This study uses the social media site Reddit to recruit and interview women who have been refused reproductive healthcare.

Background

Social Media Recruitment

As the popularity of social media sites has increased, so has the number of studies that have begun using these sites to recruit for research studies. Recently, Facebook and Twitter have been used in innovative ways to recruit hard to reach populations. Researchers have also used a combination of different social media platforms and other methods of recruitment to attempt to access hard to reach population.

Facebook, in particular has paid Facebook advertisements that appear on the screen of targeted user profiles, which have been used to recruit participants in many studies. The advertisements, appearing to the right of a user's Facebook's newsfeed (a running list of posts by a user's friends) are curated by using data from a user's profile and internet browsing history. For example, studies with tobacco users have used Facebook in an attempt to reach this often stigmatized group of people, with varying results. One study targeting eligible smokers for lung cancer screenings found Facebook advertisement recruitment to be more cost-effective and efficient for recruiting adult smokers compared with a newspaper advertisement campaign (Carter-Harris, et al 2016). However, a similar study for a smoking cessation clinical trial found no statistical difference between the number of eligible individuals, number of enrolled participants, or the number of participants who completed the study between Facebook recruitment and traditional recruitment strategies such as mailings and community events (Frandsen, et al 2016). Frandsen and colleagues also found that while the

overall costs were less for Facebook recruitment compared with traditional recruitment strategies, more people were enrolled into the study through traditional methods.

Facebook advertisements are useful in reproductive health studies. Studies have used the paid advertisements to target and recruit certain populations to investigate sexually transmitted infections. For example, these advertisements have been used to understand HPV vaccination knowledge and prevalence among young people (Nelson, et al 2014; Subasinghe, et al 2016), to assess attitudes towards Chlamydia screenings through online surveys among 278 people (Ahmed, et al 2013), and to recruit 1,221 young HIV-positive participants (Yuan, et al 2016).

Historically, another hard to reach group for research studies has been adolescent gay or bisexual men, and teenaged men who have sex with men (Prescott, et al 2016). Prescott and colleagues designed a study to target this group for an HIV prevention text message program using Facebook paid advertising for recruitment, along with Google AdWords advertisements, Google's paid advertisements that appear when a user Googles certain words. The Facebook paid advertisements used information from user profiles including location, age, gender, and keywords (called "interests" on Facebook) that were relevant to the study group. The study found that Facebook paid advertising is quite effective, especially when advertisements are continually modified to meet specific recruitment needs, are broadly targeted, and are designed with salient images targeting the community of recruitment (Prescott, et al 2016). A number of other studies have also used social media, including Facebook advertisements, Grinder (a gay dating app), Adam4Adam (a gay dating website), and Craigslist to recruit adult gay males for studies on HIV education and prevention campaigns, and attitudes towards Preexposure Prophylaxis (PrEP) used to prevent new HIV infections (Martinez, et al 2014; Lelutiu-Weinberger, et al 2015; Hall, et al 2016).

Facebook paid advertisements have also been used in conjunction with traditional mailings. In one study, paid Facebook advertisements were targeted towards 13- and 14-year-old girls on Facebook (Schwinn, et al 2017). Interested girls clicked on the advertisement where there was an overview of the study; for girls who wanted more information or were interested in participating, they entered their name and address to receive a paper mailing with more

information and parental consent forms. Adam and colleagues (2016) studied the effectiveness of paid advertising compared to traditional methods for the recruitment of 115 pregnant women ages 23-40 years old into a randomized controlled trial. The study found that Facebook advertisements led to the recruitment of not just more women per month but also more women who were eligible for the study. Furthermore, the Facebook advertisements also had a lower cost per eligible woman compared with traditional recruitment methods.

Twitter has been used, although to a lesser extent, to recruit for studies. O'Connor and colleagues (2013) created a Twitter account to circulate a URL for a website containing a questionnaire aimed at older mothers. The study's Twitter account engaged parenting community Twitter conversations, tweeted at celebrities and organizations, and posted about the study to their followers in an attempt to share the questionnaire widely. Over the 11-week study, 749 original tweets were posted and 529 mothers accessed the survey, with 299 mothers fully completing the survey. Guillory and colleagues (2016) used Twitter promoted tweets (advertisement tweets), an online panel (using survey-website Qualtrics), and a combination of the two to advertise a survey for electronic cigarette users. On Twitter, the promoted tweet was targeted to users older than 18 years of age who had either used or searched for certain words related to smoking and electronic cigarettes. Overall, the Guillory and colleagues found that using Twitter ads were more time efficient in recruiting younger users, while using a combination of the two platforms yielded a more diverse sample.

Additionally, studies have used a combination of different social media platforms, including Facebook, Twitter, Craigslist, Survey Sampling International (an online survey sampling company) and AdBrite, to recruit potential participants (Ramo, Hall and Prochaska 2010, Musiat, et al 2016; Yuan, et al 2016; Gioia, et al 2016; Staffileno, et al 2016;).

Recently, Reddit has been used to investigate users' perceptions of different health conditions and effects, although to our knowledge no study has prospectively recruited through this site. Reddit (Figure 1) is a social media site which users can anonymously post news, articles, or text, or comment on others' posts. Subreddits (Figure 2) are pages within Reddit that are focused on specific topics or themes. Demographically, 33% of Reddit users are female and 64% are between 18- to 29 years old, while another 29% of users are 30-49 years old (Pew

Research Center, 2016). Reddit users are 70% Non-Hispanic White, 12% Hispanic, and 7% Non-Hispanic Black. Thirty-five percent of Reddit users make more than \$75,000 and 30% make less than \$30,000.

Pavalanathan and De Choudhury (2015) focused on the use of “throwaway accounts” in mental health discussions on Reddit. These throwaway accounts, often used only for a single post and then disposed of, allow the user to have an added sense of anonymity. The authors created a comprehensive list of subreddits and from each post on the subreddit, collected information on the post title, content, timestamp, comments, and the total number of upvotes and downvotes (if a user likes a post, up-voting the post will make the post rise higher on a subreddit while down-voting it will demote it). They found that throwaway accounts were more likely to be used in mental health forum subreddits compared with other subreddits. Li, et al (2016) developed keyword searches and relevance ranking (the number of comments/replies, upvotes, and downvotes) to find e-cigarette-themed subreddits and pertinent posts within these subreddits, and then analyzed these posts for symptoms of e-cigarette juice use. A similar methodology was used to determine user views of e-cigarette flavors, including trends, flavor popularity, and flavor mixing patterns (Wang, et al 2015). Tamersoy, et al (2015) used an available Reddit dataset to collect a sample of users in two subreddits, r/StopDrinking and r/StopSmoking. The last 1,000 posts were analyzed for title, content, timestamp, and post score (the difference between the number of upvotes and number of downvotes). User behavior on Reddit has also been studied. Singer, et al (2016) obtained a publically available dataset of all 1.7 billion comments on posted on Reddit, and analyzed a sample of these comments to investigate comment quality of users during Reddit sessions.

Conscientious Objection

Conscientious objection occurs when individuals refuse to participate in an activity, deeming it “incompatible with his or her moral, philosophical, or ethical beliefs” (Chavkin et al, 2013). Historically, this practice originated with men who refused to be conscripted into military service. Now, however, it can refer to any number of activities including granting marriage licenses to same-sex couples, capital punishment, or euthanasia which are refused for moral reasons. Within the realm of reproductive health, healthcare providers act as a

conscientious objector when they refuse to provide contraception; emergency contraception; pre-abortion counseling, abortion, or post-abortion care; assistive reproductive health technology such as in vitro fertilization; or prenatal diagnosis. This study will focus on the refusal of contraception and abortion services.

Providers refuse care because of their beliefs that the services would harm an “unborn human life” and they do not believe they should be made to be complicit in the act (Card 2011). Specifically, such providers frequently believe that contraception, particularly emergency contraception (EC) (contraception often taken within 71 hours of unprotected sex in order to prevent pregnancy), harms zygotic life or prevents a pregnancy that could have begun. Thus they do not feel ethically or morally comfortable (AAPCA 2005; Card 2011).

When providers refuse to prescribe contraception to women, unintended pregnancies, infant deaths, and unsafe abortion rates all increase (Chavkin, et al 2013). Conscientious objection can also lead to the overburdening of providers who do offer these services and then provider burnout. These, in turn, can raise costs for individuals, communities, and health systems.

When providers refuse to provide safe abortions, the rates of unsafe abortions and resulting negative health outcomes, poor maternal mental health, and stigmatization of providers who are willing to provide this service all increase (Chavkin et al, 2013). This, again, places financial burdens on all levels of the healthcare system.

Healthcare professionals argue that it should be their choice whether or not to prescribe and fill contraception, and they should not have to compromise their morals for their job. However, others argue that healthcare providers unfairly impose their own personal views on patients. Often times, this refusal places an especially disproportionate burden on poorer women and women of color who might not be able to travel to find a willing provider or afford additional visits to other providers. Provider refusal can also impact time sensitive cases, for example in the case of a woman who is seeking emergency contraception that must be taken within a few days after sex to be effective (Cantor and Baum 2004).

The Study

While previous studies have analyzed conscientious objector status within reproductive health, we have found no published data from qualitative studies that have interviewed women who were denied reproductive healthcare due to their healthcare provider's or pharmacists' acts as a conscientious objector. Providers include doctors, nurses, receptionists, insurance providers, and anyone else who is legally allowed to give women healthcare or allow her to access care. Our objective was to evaluate women's experiences when they are turned away from obtaining reproductive healthcare: the conversations they have with their provider(s) and family members, if they are able to find and obtain care somewhere else, and whether they decide to return to the provider for further care in the future. This study is innovative as it recruits women through Reddit, in an attempt to access a hard to reach population, i.e. women refused reproductive healthcare.

Methods

We recruited women over the age of 18 years of age who believed that they had encountered barriers to receiving contraception or abortion services by their health care providers or pharmacists in the last two years in the U.S. Women who were denied services because of an accepted contraindication (e.g., history of blood clots or coronary heart disease) were not eligible. Women were recruited both by recruitment posts asking for interested women to respond, and by the research coordinator contacting women who had posted their story.

Recruitment Posts

A keyword search was used to find relevant subreddits in which to post. Phrases including "turned away from care," "abortion," "contraception," and "refused reproductive care" were keyed into Reddit's search function to find subreddits that attract posts with these phrases. Initially, r/TwoXChromosome and r/birthcontrol were the only two subreddits used. We contacted the moderators of each of these subreddits and asked for permission to recruit. We also asked the moderators to read the recruitment post and offer any suggestions or comments. The moderator edits were incorporated into the recruitment post and on the initial posting, the moderator commented on the post to verify the post and user. We posted this

recruitment post (Figure 4) to the subreddits on various times and days in order to be seen by a variety of Reddit users.

We used another keyword search to identify other relevant subreddits, when the initial two did not return many relevant posts. We posted recruitment posts in r/abortion, r/prochoice, r/familyplanning, and r/childfree. Some subreddits, such as r/birthcontrol, requires “flair”, or a tag for the post, to tell Reddit users what the post is about. Examples include rant, educational, experience, which method, side effects, mistake or risk, and how to use. Initially, we used “educational” flair, but that was changed to “experience” in order to appeal to women with applicable stories. Interested women either commented on the recruitment post or private messaged the research coordinator. If a woman commented on the recruitment post to say she was interested, the research coordinator commented publically to thank the woman for her interest and tell her that she would be messaged privately. We then messaged the woman privately to explain the study further. If a Reddit user publically commented on the post to ask a question or make a comment, the research coordinator answered the question or expanded upon the study publically so other users could read the conversation.

Recruitment Messages

The research coordinator also searched Reddit for pertinent stories that had already been posted. The research coordinator used Reddit’s keyword search function and did searches including “turned away from accessing abortion,” “turned away from accessing contraception,” “not allowed to get an abortion,” “not allowed to get contraception,” “refused abortion,” and “refused contraception.” Once a potentially-eligible post was found, the research coordinator evaluated whether the post fit the requirements of the study. Unless the post clearly did not fit the requirements (i.e., the interaction happened more than two years ago, the user mentioned she is under the age of 18 years old, or she was turned away due to a medical contraindication) the research coordinator private messaged the Reddit user (Appendix B) to ask if she would be interested in participating in the study. The research coordinator also read through the comments on the post, if any, to see if any Reddit users commented about their own personal story. If so, the research coordinator messaged the commenter as well.

Screening questions and consent

Once a woman responded either to the recruitment post or to the research coordinator message about the study, the research coordinator asked the woman to verify three screening questions: *“Can you verify 1) that you are 18 years old or older, 2) your US zip code, and 3) that you encountered barriers in the last two years that hindered your ability to access contraception or abortion services in the US.”* If the woman verified that she was 18 years of age or older, if her zip code did not match any other participant’s zip code, and if she had encountered barriers within the last two years, then she was told she was eligible for the study. We included the zip code exclusion in the hopes of preventing a Reddit user from encouraging her friend to make up a story to do the study purely for the Reddit gold. The research then sent her the link to the consent form with the message: *“The following is a link to the consent form. Please read it over and let me know if you have any concerns or questions. Since we are not collecting any identifying information, you won't be asked to sign your name - instead please message me back saying that you consent to participate in the study. We can then set up a time for the interview.”* To maintain privacy, no identifying information (including names) was collected. The documentation of consent consisted of the participant replying to the research coordinator that she had read and understood the consent form and wished to continue with the study. At this point, the participant was assigned an identifying number. The RC then messaged the participant back to set up a time to conduct the interview, either over the telephone or over Reddit’s private message system. If the participant opted for the telephone interview, the research coordinator also asked for permission to record the call using a recording application on the telephone. If the participant did not consent to the recording, the research coordinator was to type up the answers during the interview or copy/paste the exchange from the private message, depending on whether the interview was conducted through the telephone or online, respectively. All participants in the study opted for a recorded telephone interview. The research coordinator asked for the participant’s phone number, explaining that the phone number would be immediately deleted after the interview was completed.

Reddit Gold

As an incentive to participate in the study, women were given three months of Reddit Gold (a value of \$7.98). As part of Reddit, one user can directly send another user this gold,

which allows the user to have added benefits to the site. This system (rather than sending a compensation through email or the mail) was used to protect participant privacy.

Survey Instrument

The survey instrument [Appendix 1], a semi-structured open-ended interview with probes for the interviewer, was created by the authors using questions from a previous survey (Cockrill, et al 2013). This format was chosen in order to allow the interviewer the ability to guide the conversation to best understand the individual patient's story of being refused care. The qualitative interview helped to illuminate the interactions between the participant and the provider or pharmacist who refused to provide access to contraception or abortion care. During the interview the participant was first asked several demographic questions: age (in years, to protect identifiable data), and race. Then the participant was asked to explain the interaction between herself and the provider: what each party said, if there was any explanation given on the part of the provider, if the provider gave her a referral, and her subsequent steps (if any) to seek care. Additional questions included opinions about the encounter, if she talked to anyone about what happened, and her views on abortion.

Results

Recruitment posts

We posted recruitment messages thirteen times (Table 1) over the course of five months: four times each on r/birthcontrol and r/TwoXChromosome, two times on r/prochoice, and because of Reddit rules against cross or repeat posting, only one time each on r/abortion, r/familyplanning, and r/childfree.

Initially, r/TwoXChromosome seemed to be the best place to post because of the large community of women and number of posts relevant to this study. The moderator initially approved the first posting on r/TwoXChromosome and publically commented to verify the post. The second time the recruitment message was posted, one of the moderators removed the post and wrote *"Surveys require moderator approval before posting -- I don't see a message from you in our mod mail so I've removed this post. To contact us for clearance, please use the 'message the moderators' link in the sidebar it send a pm [private message] to /r/twoxchromosomes. Also LOL at 'reddit history,' you've been beat by several years."* The

moderators had changed on this subreddit and did not know that a past moderator had already approved the study. Furthermore, in the recruitment post, we wrote that this study was making Reddit history, but it seems that this moderator felt that was untrue. The research coordinator messaged the moderator with IRB documents and approval letter and the moderator gave their permission for the message to be posted. Before the last two times the message was posted, the wording of the message was updated. The research coordinator messaged the r/TwoXChromosomes moderators in order to read the new post and offer any comments or suggestions. The moderator replied *"You've posted three times [sic]. We're not into being spammed by these things. It's sad that you didn't get the results you wanted, but that's how it goes sometimes."* The fourth time the recruitment message was posted on r/TwoXChromosome, a different moderator removed the post and wrote *"This submission was removed: surveys, research, and petitions are not considered relevant"* with links to the r/TwoXChromosome rules page. There seemed to be conflicting ideas about what was relevant to the subreddit, as previous moderators had allowed the post.

The r/birthcontrol moderator was asked to take a look at the updated recruitment post as well and responded *"(Other Mod [moderator], not the one that just responded last time but) This is a small sub[reddit], where many users stop by just to ask one question and leave. Many use throwaways as they don't want it to be connected to their main Reddit account. Plus, the anonymous nature of Reddit itself. And I have never seen these posts for participates for studies work well even in larger subs. You have an uphill battle - so I don't have any advice, unfortunately. :([sad emoticon]."* When asked to publicly verify the new and updated post anyways, the moderator did not respond.

The recruitment posts also received three negative comments from the Reddit community in response to recruitment posts. A Reddit user posted *"You are using a **HIGHLY anonymous** forum to try to get participants? Wrong platform (if that wasn't clear by the sarcasm). I've experienced what you describe, but not going to possibly dox [out] myself for [Reddit] gold - everyone that uses mobile apps have **4 years** worth of gold. Edit: Posted this because this is a repeat post / spammy and from their posts they think Reddit is a good platform. It isn't"* [bolding from original post]. The research coordinator chose not to respond to

this comment. Another user replied to this post, but before the RC saw that comment, it was removed for name calling (one of the rules of the subreddit) by the moderator. Another comment, this time in reply to a post in r/TwoXChromosome, read *"Having staked out a position, time to gather data."* It seems that this user felt that our question and research study was biased.

There were five questions asked in the form of public comments. A user replied to a post in r/birthcontrol *"Do you have an IRB and any statement on the research? Do you have a data-safety monitoring plan? A supervising professor? And BTW, not at all reddit history. Very common to post on reddit for survey respondents. However, unless and until you can show that you are a qualified and documented researcher, I advise anyone reading this against participation."* The research coordinator responded to this post with public post, writing *"Hi! Yes, my research has been approved by my institution's IRB. We have a protocol, data safety monitoring plan, and a supervising professor. I am more than happy to send the documents to you - would you like me to private message them to you? Thanks for your questions."* The first poster replied *"Nope, I just wanted to make sure anyone reading was protected. As you might imagine, (although I am not a mod here) we get out [our] fair share of folks trolling."*

One user asked *"I've never experienced either, so I can't help you on that front, but I am curious- is it a concern that the sampling method (from the "prochoice" forum on a website) will somewhat skew the results, or if it's qualitative data, it doesn't really matter?"* The research coordinator responded *"Thanks for your question! Since its qualitative data, we go in with the understanding that the data might be skewed depending on who responds. We are trying to recruit from various subreddits, but do understand that there might be certain similar characteristics between participants. It's definitely a limitation in the research, but we still hope to collect important information that can be used to help prevent this from happening to other women in the future."* Another user asked *"When will the study be closed? Is information being collected for this semester only or is it more of a senior thesis?"* to which the research coordinator replied *"Depending on how many women decide to participate, we will probably be closing the project in the middle of November 2016."* Another question was *"Does refusal for sterilization count?"* to which the research coordinator replied *"Yes, if it happened within the*

last 2 years and you weren't refused because of a genuine health problem that would make the procedure dangerous. If you are still interested, please feel free to private message me!" The last question asked was *"Are you looking for international participants or just American?"* to which someone responded *"Hopefully. I'm from germany [sic] and would be glad to participate..."* The research coordinator responded to both of these comments, saying *"Hi. Thanks for your interest! I am only looking for people who were refused care in the United States. But if you were turned away in the United States, but are not American, you could still be eligible. Thanks!"*

No interviews originated from a recruitment post or user comments. Two people messaged the research coordinator after reading a post. One woman got through the screening questions but never replied after the research coordinator sent the consent form. The other woman never answered the screening questions. Three people commented on one of the recruitment posts that they were interested, and the research coordinator private messaged them. One of the users who responded answered the screening questions but did not reply after seeing the consent form. Another user did not answer the screening questions but replied to the screening question message, writing *"If you count sterilization for contraception, then Im [sic] a fit."* The RC then followed up with the consent form and another request to answer the screening questions, but the user did not respond. The last woman received the screening questions but replied that she did not fit the requirements.

Recruitment private messages

The research coordinator messaged thirteen different users after reading their stories on Reddit. Six users never responded to the initial message. Two users never responded after the research coordinator sent the three screening questions. One user responded that she did not fit the study requirements (she was refused care more than two years ago). One user had deleted her account so the private message could not be sent. Three of the users who the research coordinator messaged were interviewed and completed the study.

Discussion

Most women stopped responding after the consent form was sent out. It is unclear if that is because they felt uncomfortable after reading the consent form and did not want to

participate, or if perhaps they chose not to open and read the consent form because they did not want to spend any more time on the project.

Our three participants were three of the women with whom the research coordinator initiated contact. The finding is surprising, as we hypothesized that if a woman read the recruitment post and followed up with the research coordinator, it stands to reason that she would have an interest and want to follow up and participate in the study. But perhaps the women who felt strongly enough about their experience to post about it on Reddit were also the women who were interested in telling their stories.

Although we thought private messaging would be a useful tool, we discovered that it was unhelpful as it did not show us if the woman had read or even seen the message. There was no time or date stamp, so sometimes it was not clear if the message had gone through, as a potential participant would enthusiastically respond to the research coordinator's comment on her post or direct message about participating, but then never follow through after the screening questions and consent form were sent. Perhaps Reddit users do not use the private message tool that often. We have no information on the rates of use of the private messaging system.

Another issue with private messaging is that women who had previously posted their stories on Reddit did so on throwaway accounts. Many of the women who had posted this kind of personal story about accessing reproductive healthcare use throwaway accounts for exactly this reason: they want to remain as anonymous as possible. Often times, once a woman who uses a throwaway account posts her story, she does not access that account, including the private message function, again. Sometimes users will name their throwaway account after this phenomenon, for example "throwaway123." Other times, users will include in their post that they are posting through a throwaway account. But sometimes it is impossible to know if a user's account is a throwaway or not. Perhaps the more traumatizing an event, the higher likelihood there is to use a throwaway account. Thus women with important experiences of being turned away from care were not interviewed. Therefore, the private messaging approach is unlikely to be useful for recruiting participants to a study on a sensitive topic. Previous scholars have analyzed the prevalence of throwaway accounts but none has attempted to

contact users of throwaway accounts or use their posts (Pavalanathan and De Choudhury, 2015).

Additionally, users reacted with suspicion to our posts in the subreddits. People who were messaged by the research coordinator did not express suspicion: they either did not respond or did respond with interested. That is, the women who were directly messaged and who responded did not seem suspicious of the study's intent. But perhaps the women who were suspicious of our intentions decided not to respond.

Lastly, when posting in subreddits, several moderators were not pleased that the recruitment post was posted in the same subreddit several times. There are also Reddit rules that ban cross posting, i.e. posting the same post on several different subreddits. However, some moderators accept cross posting on their subreddits, even if the subreddit rules say differently. Future researchers should create stronger relationships with Reddit and/or moderators, in order to understand precisely what is and is not allowed on different subreddits. talk with moderators of different subreddits to understand what they permit and what they do not.

When posting our recruitment messages, we did not have an algorithm or clear pattern for when and where to post recruitment messages. Although we posted at different times of the day, different days of the week, and in different subreddits, there was not a systematic method. Future researchers should develop a way of methodically posting in order for the highest number of Reddit users to see the post.

Another limitation of this study is the narrow eligibility requirements. In order to compare participant experiences, we required that the woman was denied certain care in the last two years in the United States. Perhaps if we had widened that criteria we would have gotten a bigger sample size. For example, several women replied that they were denied care, but not within the last two years or that they were denied other types of care that we had not listed. It is very possible that future studies using Reddit with wider eligibility requirements, would recruit more participants.

Reddit is an emerging social media site that could be useful for research due to its representative population of users and anonymous nature. However, unlike Facebook or

Twitter, it can be difficult to connect with users precisely because of that anonymous nature as well as the design of the site. This study was the first, to the authors knowledge, to use Reddit to recruit participants for data collection. Future researchers should continue to recruit hard to reach populations from Reddit using both recruitment posts and previous posts of eligible users. Researchers should focus on how to use the private messaging system to messaging women, perhaps with images to get users interested in the study. Future researchers should also investigate ways to combine Reddit recruitment with Facebook or Twitter recruitment in order to directly compare advantages and disadvantages.

Works Cited

- Adam, L.M., Manca, D.P., and Bell, R.C. Can Facebook Be Used for Research? Experiences Using Facebook to Recruit Pregnant Women for a Randomized Controlled Trial (2016). *Journal of Medical Internet Research*, 18(9), e250. Doi:10.2196/jmir.6404
- Ahmed, N., Jayasinghe, Y., Wark, J.D., Fenner, Y., Moore, E.E., Tabrizi, S.N., Fletcher, A., and Garland, S.M. (2013). Attitudes to chlamydia screening elicited using the social networking site Facebook for subject recruitment. *Sexual Health*, 10(3), 224-228. Doi: 10.1071/SH12198
- American Academy of Pediatrics Committee on Adolescence (AAPCA). (2005). Emergency contraception. *Pediatrics*, 116(4), 1026-35. Doi: 10.1542/peds.2005-1877
- Cantor, J., and Baum, Ken. (2004). The limits of conscientious objection-may pharmacists refuse to fill prescriptions for emergency contraception? *The New England Journal of Medicine*, 351(19)
- Card, R. F. (2011). Conscientious objection, emergency contraception, and public policy. *The Journal of Medicine and Philosophy*, 36(1), 53-68. doi:10.1093/jmp/jhq062
- Carter-Harris, L., Bartlett-Ellis, R., Warrick, A., and Rawl, S. (2016). Beyond Traditional Newspaper Advertisement: Leveraging Facebook-Targeted Advertisement to Recruit Long-Term Smokers for Research. *Journal of Medical Internet Research*, 18(6), e117. Doi: 10.2196/jmir.5502
- Chavkin, W., Leitman, L., Polin, K., & Global Doctors for Choice. (2013). Conscientious objection and refusal to provide reproductive healthcare: A white paper examining prevalence, health consequences, and policy responses. *International Journal of Gynecology and Obstetrics*, 123, S41-56. doi:10.1016/S0020-7292(13)60002-8
- Frandsen, M., Thow, M., and Ferguson, S.G. (2016). The Effectiveness Of Social Media (Facebook) Compared With More Traditional Advertising Methods for Recruiting Eligible Participants To Health Research Studies: A Randomized, Controlled Clinical Trial. *Journal of Medical Internet Research: Research Protocols*, 5(3), e16. Doi: 10.2196/resprot.5747
- Gioia, C.J., Sobell, L.C., Sobell, M.B., and Agrawal, S. (2015). Craigslist Versus Print Newspaper Advertising for Recruiting Research Participants for Alcohol Studies: Cost and Participant

- Characteristics. *Addictive Behaviors*, 54(3), 24-32. Doi: 10.1016/j.addbeh.2015.11.008
- Guillory, J., Kim, A., Murphy, J., Bradfield, B., Nonnemaker, J., and Hsieh, Y. (2016). Comparing Twitter and Online Panels for Survey Recruitment of E-Cigarette Users and Smokers. *Journal of Medical Internet Research*, 18(11), e288. DOI: 10.2196/jmir.6326
- Hall, E.W., Heneine, W., Sanchez, T., Sineath, R.C., and Sullivan, P. (2016). Preexposure Prophylaxis Modality Preferences Among Men Who Have Sex With Men and Use Social Media in the United States. *Journal of Medical Internet Research*, 18(5), e111. DOI: 10.2196/jmir.5713
- Lelutiu-Weinberger, C., Pachankis, J. E., Gamarel, K. E., Surace, A., Golub, S. A., & Parsons, J. T. (2015). Feasibility, Acceptability, and Preliminary Efficacy of a Live-Chat Social Media Intervention to Reduce HIV Risk Among Young Men Who Have Sex With Men. *AIDS and Behavior*, 19(7), 1214–1227. <http://doi.org/10.1007/s10461-014-0911-z>
- Li, Q., Zhan, Y., Wang, L., Leischow, S., and Zeng, D.D. (2016). Analysis of symptoms and their potential associations with e-liquids; components: a social media study. *BMC Public Health*, 16(674). Doi: 10.1186/s12889-016-3326-0
- Martinez, O., Wu, E., Shultz, A.Z., Capote, J., López-Rios, J., Sandfort, T., Manusov, J., Ovejero, H., Carballo-Diequez, A., Chavez Baray, S., Moya, E., López Matos, J., Delacruz, J.J., Remien, R.H., and Rhodes, S.D. (2014). Still a Hard-to-Reach Population? Using Social Media to Recruit Latino Gay Couples for an HIV Intervention Adaptation Study. *Journal of Medical Internet Research*, 16(4), e113. Doi: 10.2196/jmir.3311
- Musiat, P., Winsall, M., Orlowski, S., Antezana, G., Schrader, G., Battersby, M., and Bidargaddi, N. (2016). Paid and Unpaid Online Recruitment for Health Interventions in Young Adults. *Journal of Adolescent Health*, 59(6), 662–667. Doi: 10.1016/j.jadohealth.2016.07.020
- Nelson, E.J., Hughes, J., Oakes, J.M., Pankow, J.S., and Kulasingam, S.L. (2014). Estimation of Geographic Variation in Human Papillomavirus Vaccine Uptake in Men and Women: An Online Survey Using Facebook Recruitment. *Journal of Medical Internet Research*, 16(9), e198. Doi: 10.2196/jmir.3506
- O'Connor A., Jackson L., Goldsmith L. & Skirton H. (2013) Can I get a retweet please? Health research recruitment and the Twittersphere. *Journal of Advanced Nursing* 70(3), 599–

609. doi: 10.1111/jan.12222

- Pavalanathan, U., and De Choudhury, M. (2015). Identity management and mental health discourse in social media. Proceedings of the ... International World-Wide Web Conference. International WWW Conference, 2015(Companion), 315–321.
- Pew Research Center. (2016). Nearly 8-in-10 Reddit Users Get News on the Site. Retrieved from http://www.journalism.org/files/2016/02/PJ_2016.02.25_Reddit_FINAL.pdf
- Prescott, T.L., Phillips II, G., DuBois, L.Z., Bull, S.S., Mustanski, B., and Ybarra, M.L. (2016). Reaching Adolescent Gay, Bisexual, and Queer Men Online: Development and Refinement of a National Recruitment Strategy. *Journal of Medical Internet Research*, 18(8), e200. Doi: 10.2196/jmir.5602
- Ramo, D.E., Hall, S.M., and Prochaska, J.J. (2010). Reaching young adult smokers through the internet: comparison of three recruitment mechanisms. *Nicotine and Tobacco Research*, 12(7), 798-75. Doi: 10.1093/ntr/ntq086
- Schwinn, T., Hopkins, J., Schinke, S.P., and Liu, X. (2016). Using Facebook Ads with Traditional Paper Mailings to Recruit Adolescent Girls for a Clinical Trial. *Addictive Behaviors*, 65(2), 207-213. Doi: 10.1016/j.addbeh.2016.10.011
- Singer, P., Ferrara, E., Kooti, F., Strohmaier, M., and Lerman, K. (2016). Evidence of online performance deterioration in user sessions on Reddit. *PLoS One* 11(8). Doi: 10.1371/journal.pone.0161636
- Staffileno, B.A., Zschunke, J., Weber, M., Gross, L.E., Fogg, L., and Tangney, C.C., (2016). The Feasibility of Using Facebook, Craigslist, and Other Online Strategies to Recruit Young African American Women for a Web-Based Healthy Lifestyle Behavior Change Intervention. *Journal of Cardiovascular Nursing*, in process.
- Subasinghe, A.K., Nguyen, M., Wark, J.D., Tabrizi, S.N., and Garland, S.M. (2016) Targeted Facebook Advertising is a Novel and Effective Method of Recruiting Participants into a Human Papillomavirus Vaccine Effectiveness Study. *Journal of Medical Internet Research: Research Protocols*, 5(3), e154. DOI: 10.2196/resprot.5679
- Tamersoy, A., De Choudhury, M., & Chau, D. H. (2015). Characterizing Smoking and Drinking Abstinence from Social Media. *HT... : The Proceedings of the ... ACM Conference on*

Hypertext and Social Media. ACM Conference on Hypertext and Social Media, 2015, 139–148. Doi: 10.1145/2700171.2791247

Wang, L., Zhan, Y., Li, Q., Zeng, D., Leischow, S., and Okamoto, J. An examination of electronic cigarette content on social media: Analysis of e-cigarette flavor content on Reddit. (2015). *International Journal of Environmental Research and Public Health*, 12(11), 14916-14935. Doi: 10.3390/ijerph121114916.

Yuan, P., Bare, M.G., Johnson, M.O., and Saberi, P. (2014) Using Online Social Media for Recruitment of Human Immunodeficiency Virus-Positive Participants: A Cross-Sectional Survey. *Journal of Medical Internet Research*, 16(5), e117. Doi 10.2196/jmir.3229

Figure 1: Reddit's Front Page

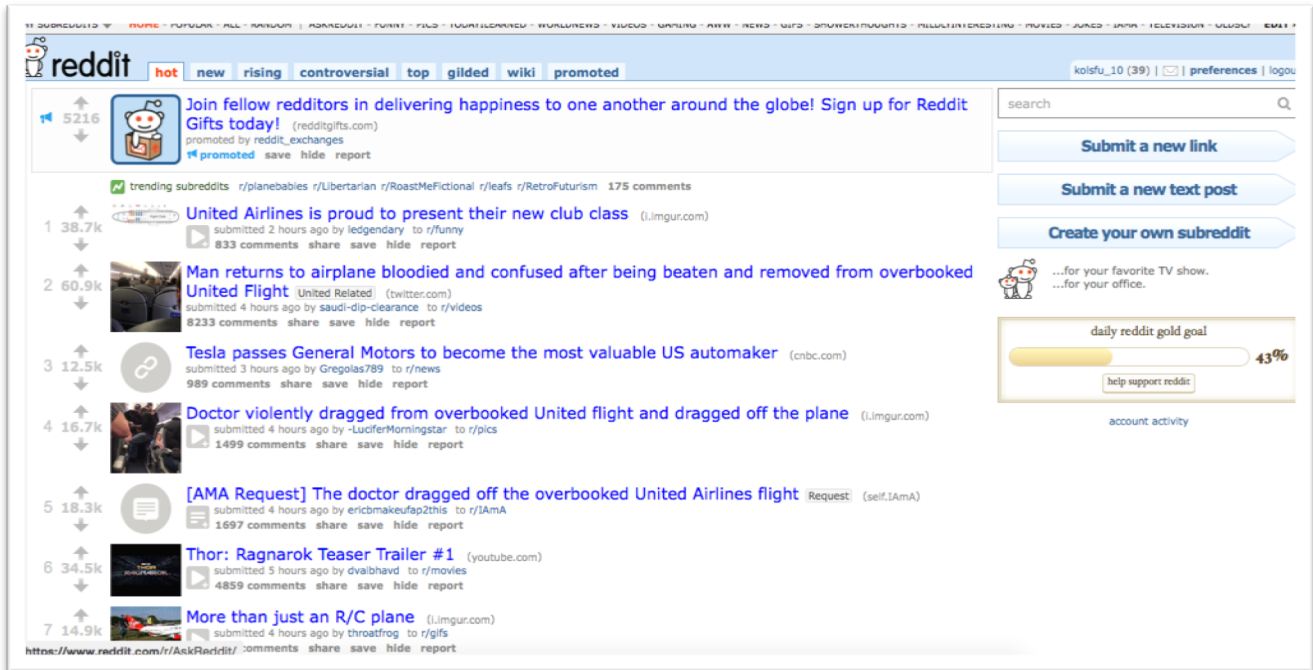


Figure 2: r/TwoXChromosome Subreddit

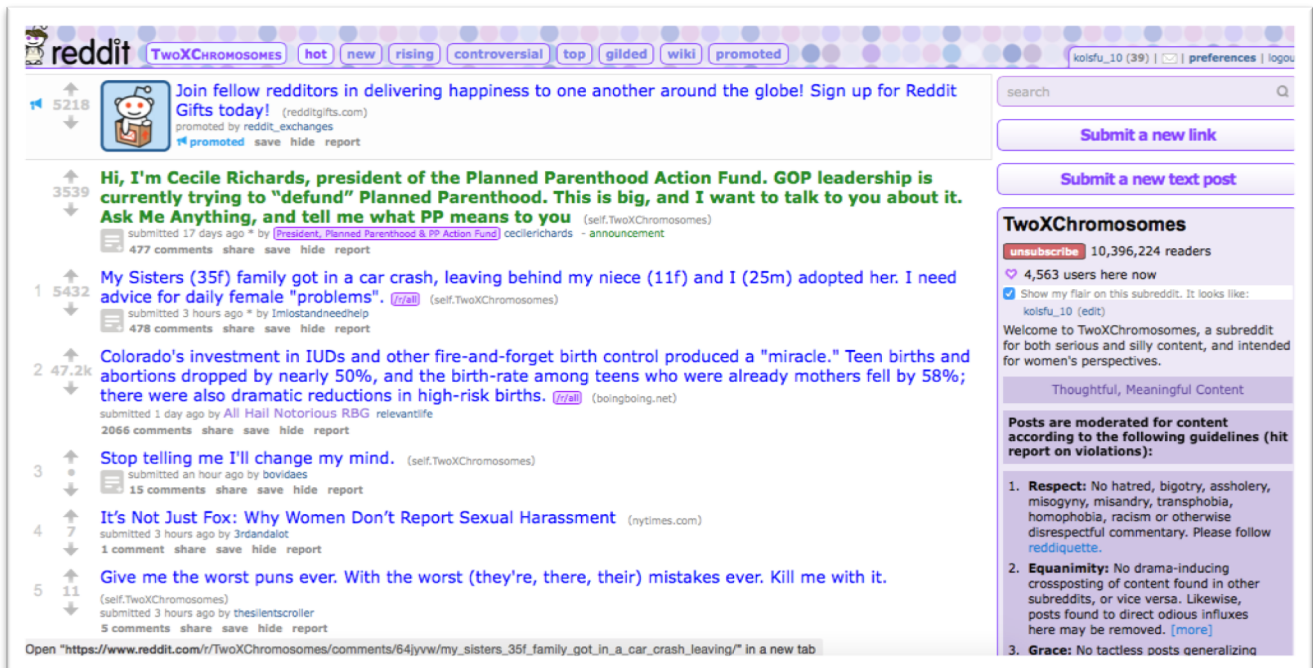


Figure 3: Recruitment Post

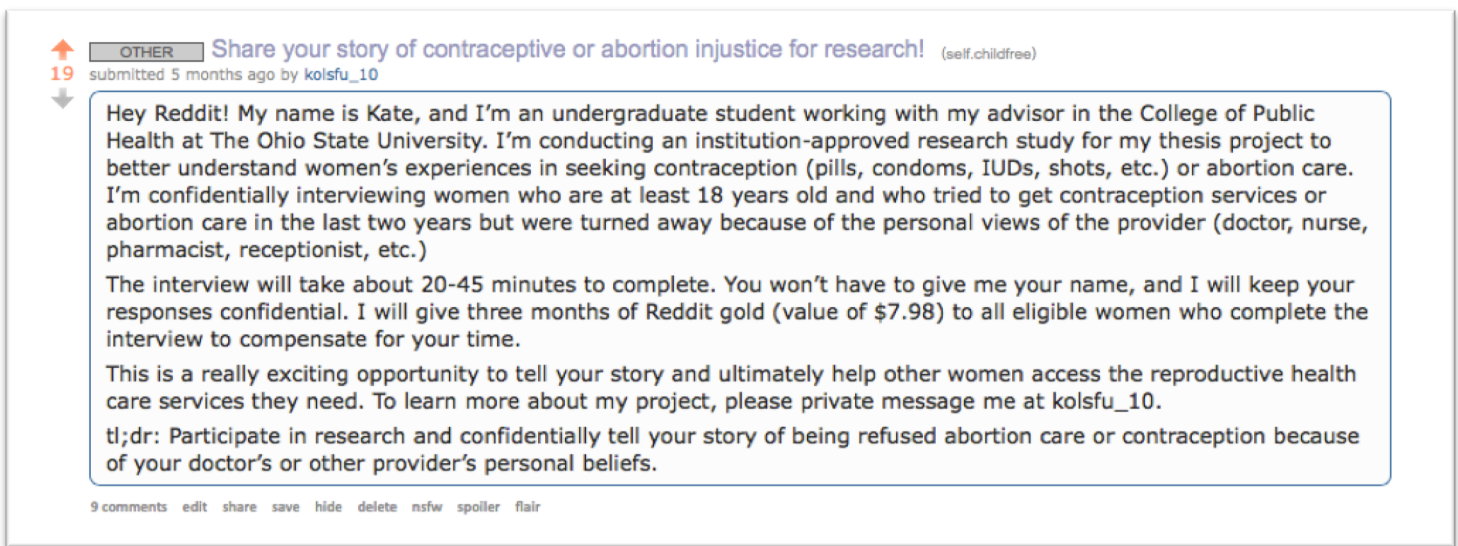


Figure 4: Private Message

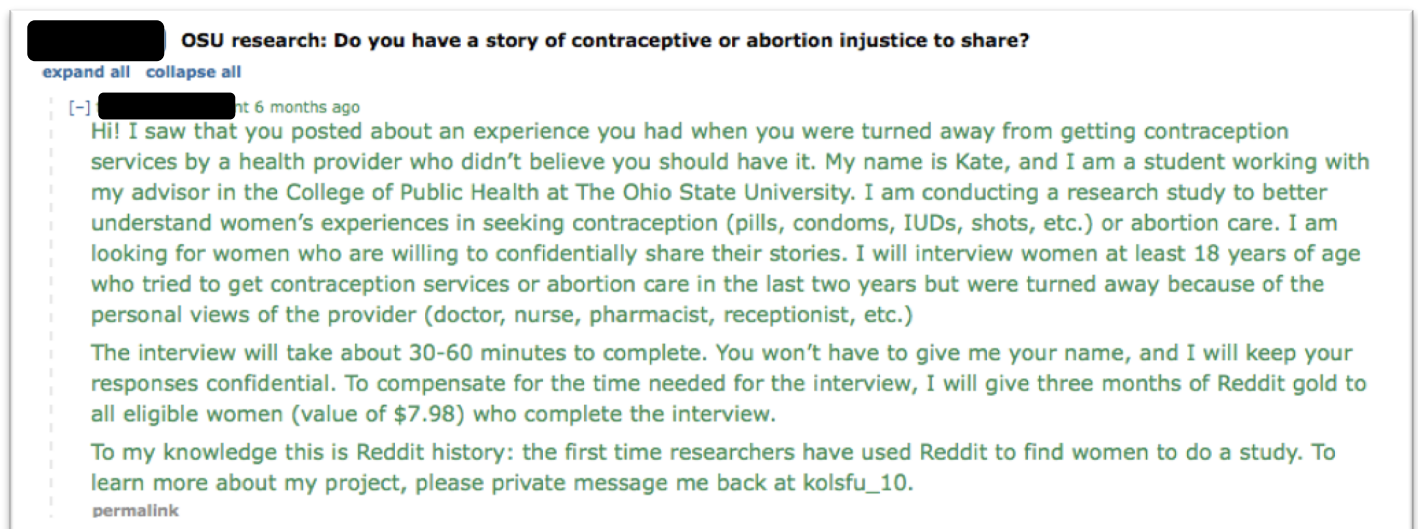


Table 1: Results of Reddit Recruitment Approaches 1 and 2

